

Problem Set 08**due Friday November 12**

(Yes, that's the day after the holiday, the price we pay for spending an entire hour on the quiz solutions.)

Reading:

Purcell Appendix A and Chapter 5.

It is your obligation to be up front regarding how much of Appendix A is indeed "Review," as in the appendix title, and how much we need to cover in detail.

The derivations, explanations and figures on Pages 194-195 are the most important in the chapter if not in the entire text. If you don't see exactly what's going on, please ask.

Also, please look at the Supplemental Notes **Non-Simultaneity in Moving Frames**, linked from our web pages.

Problems from the text:

This stuff is not easy, and so the problems are a bit thin. The dipole field will take a break for now, but will return as a (ta-da!) *Magnetic Dipole*.

5.1: More or less introductory number-crunching.

5.3: See above; note the qualifier "approximately."

5.11: A crucial result, almost too crucial to be left to the problems. By the way, where have you seen that integral before? I know where.

5.12: The answer is often misinterpreted, in that "roughly" is not to be taken to be "roughly this exact answer." That's vague, so I'll say that in the limit $\gamma \gg 1$, the angle is

$$\delta \sim \frac{1}{\gamma} \times \sqrt{\text{some rational number sort of near 1}}.$$

5.18: The only thing I can really say is to read the problem carefully, refer as suggested to Fig. 5.20, and keep careful track of what each darn symbol means. Okay, maybe be sure to read the result first, to give some idea of why you are asked to do what you do.